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ABSTRACT

This paper describes key issues in conducting impact evaluations of corporate eLearning and reports the results of a study that evaluated the impact (including return on investment) of an eLearning implementation by a large telecommunications company. The program was designed to "multi-skill" over 1,000 Customer Service Officers (CSOs) using custom-designed eLearning courses that provided coaching as an integral element. The two critical business objectives of this initiative were to save training costs and to reduce training time. More were realized. The following factors that must be considered when designing an impact evaluation for corporate eLearning are described: evaluation decisions, issues and questions; elapsed time; sample; instruments and techniques; data collection; interpretation of results; secondary benefits; data for the future; and who conducts the evaluation. (Author/AEF)

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Impact Evaluations of Corporate eLearning

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Abstract

This paper describes key issues in conducting impact evaluations of corporate eLearning and reports the results of a study to evaluate the impact (including ROI) of an eLearning implementation by a large telecommunications company. The programme was designed to multi-skill over 1,000 Customer Service Officers (CSOs) using custom-designed eLearning courses that provided coaching as an integral element. The two critical business objectives of this initiative were to save training costs and to reduce training time. More were realized.

1 Key Issues in the Design of Impact Studies

Impact evaluation is the greatest challenge faced by evaluators of any type of educational programme (Reeves & Hedberg, in press). Not surprisingly, it is also the most neglected facet of evaluation. It is not easy to determine the impact of different learning approaches in any environment. There are invariably alternative explanations and influential factors for most findings such as marketing initiatives, new processes, economic conditions, internal company politics, and the like. Reeves and Hedberg (in press) recommend that it is appropriate to consider "impact" in terms of Kirkpatrick's (1994) Level 3 (Behaviour) and Level 4 (Results) as well as Phillips' (1997) Level 5 (ROI). Further, they advise "building a case" for the impact of an eLearning programme rather than attempting to demonstrate conclusive findings in a traditional scientific sense. Several factors that must be considered when designing an impact evaluation for corporate eLearning are described below.

1.1 Evaluation Decisions, Issues, and Questions

One of the first steps in impact evaluation is delineating the issues on which the impact evaluation will focus. Are you or your clients primarily interested in improvement in work performance? Reduction in costs? Increase in sales? Reduction in complaints? Greater profitability? Return on investment (ROI)? For each of the critical issues specified by you or your clients, you should identify potential decisions that must be made about these issues. For example, if the issue is reduction in costs, what decisions will be made concerning the eLearning programme if it can be demonstrated to have a positive impact on reducing cost? Will it be implemented company wide? Or perhaps marketed as an eLearning product for use by other companies? Once the decisions are identified, you will be able to define the specific evaluation questions that will be addressed. For example, what was the average time and cost of a customer service call before and after eLearning implementation? Or what is the morale of the sales training force in the wake of a large scale eLearning initiative?

1.2 Elapsed Time

Impact studies require that sufficient time has elapsed between implementation and evaluation in order to determine whether the programme had a lasting impact on learning. The specific amount of time is related to the nature of the learning outcomes. Changes in customer relation techniques are likely to show up in the bottom line sooner than changes in the mental models that workers have of good manufacturing processes. However, the longer the time

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between eLearning implementation and impact evaluation, the more likely that there will be rival claimants to any positive results detected by the evaluation.

1.3 Sample

The sample size must be sufficient and representative (preferably random) for the study to yield valid results. Most impact evaluations utilize pre-test, post-test designs rather than the more rigorous control group designs. Few corporations have the time or resources to conduct control group studies, not to mention the liability issues that can arise in experimental approaches. Regardless of the design, sample sizes of at least 30 learners are recommended in most evaluations to permit the use of appropriate inferential statistics.

1.4 Instruments and Techniques

There are many different instruments and techniques for collecting impact data, including interviews, questionnaires, observation, self-reporting, diaries, and so forth. Regardless of what type of data collection instruments are used, they should be examined for reliability and validity. If feasible, unobtrusive data that is already routinely collected should be utilized, e.g., length of service calls or sales figures.

1.5 Data Collection

Since establishing direct causal links is difficult in education and training contexts, triangulation of data sources is the best approach to take. Triangulation involves seeking to compensate for the imperfections inevitable in any single type of measure by using multiple methods that may give you a clearer estimation of what you are evaluating. Other strategies for improving data collection include:

- allow anonymous responses to enhance validity;
- encourage high response rates to surveys and questionnaires;
- ensure subjects don't feel pressured to give 'expected' results, e.g. if surveys are distributed by the boss;
- even though most corporate evaluations occur "on-the-job," try to be as non-intrusive as possible; and
- include responses to both closed and open questions to maximise the amount (and type) of information obtained.

1.6 Interpretation of Results

It is a natural inclination to claim that any positive results stemmed from the eLearning, and that any negative, perhaps unexpected results were caused by uncontrollable factors. It is best to be cautious in your impact claims because of the number of other variables with potential impact that may not have been measured. It is especially important to acknowledge reliability limitations when placing a heavy reliance on self-reported, impressionistic data of the kind that is yielded by methods such as interviews and focus groups.

1.7 Secondary Benefits

Don't ignore relevant side effects and extra benefits. Even if it may be difficult to attribute something as concrete as increased sales to eLearning when other things are occurring (e.g., advertising campaigns), it may be enough to demonstrate that there are self-reported and supervisor-observed increases in morale among the sales staff.

1.8 Data for the Future

Instead of conducting isolated impact evaluations, it is better to collect data that is relevant to future planning and can be relied upon to inform future training decisions by the client on an on-going basis. You should keep any raw data in a database. This can help you plan for future course maintenance and updating as well as in budgeting.

1.9 Who Evaluates?

If possible, the credibility of your impact evaluation will be enhanced if you utilize external evaluators rather than internal members of the development team. At the same time, whenever possible, development team members should take part in impact evaluations so that they can observe the results of their efforts firsthand.

2 The Case Study

2.1 Background

This study collected data from a random sample of CSOs who completed two new eLearning courses: General Billing Service (GBS) and Wireless Data Products and Services (WPS). The sample is from the first few intakes of these courses that occurred between May and July, 2001. The total enrollment in these intakes (for both courses) was 155. The total number of evaluation participants was 77 and the two sample sizes were 37 (GBS) and 38 (WPS), with no overlap. Data were also collected from the supervisors of CSOs for each sample to determine whether they observed any impact of the eLearning courses on their staff. The primary issues of concern for the evaluation clients were saving training costs and reducing training time.

Data were collected via three questionnaires for CSOs and a separate questionnaire for supervisors (for each of the two courses). Subjects in the sample received the questionnaires via e-mail and responses were anonymous in that they were sent by and returned to an external evaluator employed by the eLearning provider, not their supervisor. The evaluator was also independent of the eLearning course development process.

The first questionnaire for CSOs had 15 items and asked respondents how often they used each of the specific tasks taught in the course (everyday, most days, occasionally, never). A major purpose of this non-threatening questionnaire was to put the subjects at ease with the study, a factor that can positively affect reliability. The second CSO questionnaire had 15 items and asked about impact. Specifically, it asked the extent to which respondents performed each of these tasks after the eLearning course in comparison with how they performed the tasks prior to the course (much better, better, same, worse). The third CSO questionnaire had 9 "yes/no" items and three open-ended items, and asked whether certain behaviours and attitudes had changed because of this eLearning. The supervisor questionnaires had six closed items and one open-ended item, and asked the extent to which they observed the impact of eLearning on their staff. The open-ended items in the third CSO and Supervisor questionnaires suffered from low response rates (14 and 10) and failed to provide any significant information that had not already been derived from the closed items.

The courses in the eLearning programme had clear and specific objectives. The tasks in a given course were all relevant to one specific kind of customer call. The calls were either about wireless data products and services (WPS) or billing (GBS). The WPS course addressed 18 tasks (or how to handle 18 kinds of calls). These tasks involved explaining, assisting, guiding, and helping customers. The GBS course addressed 15 tasks, including updating customer particulars, determining correct procedures, resolving complaints and disputes and advising or informing customers.

2.2 Results from CSO Questionnaire #2 (impact)

WPS Course

The four tasks with the highest percentages of "much better than before [eLearning]" responses follow. Three of these tasks are among the most frequently used tasks, which makes these results more significant.

- Explaining the benefits of using GPRS (56%)
- Explaining the types of equipment needed to access Mobile Office (48%)
- Guiding callers in setting up their equipment to access e-ideas on the WAP (48%)
- Explaining the kinds of equipment needed to use GPRS (43%)

GBS Course

The four tasks with the highest percentage of "much better than before [eLearning]" responses follow. That these tasks are among the most frequently used tasks makes the impact even more significant.

- Determining correct procedures for reconnection of services (63%)
- Negotiating with customers for agreement on partial or deferred payments (58%)
- Interpreting basic account and payment information from the customer profile (56%)
- Advising customers on suitable payment modes for paying bills (52%)

2.3 Results from CSO Questionnaire #3 (behaviours and attitudes)

WPS Course
Between 90 and 100% said "yes" to each of the following statements:

- I now know more about wireless data products and services than I did before [eLearning].
- I now have more confidence dealing with callers [than I did before eLearning].
- I feel I can give better answers to callers' questions [than I could before eLearning].
- I don't have to transfer as many calls to others as I did before.
- I share information with more colleagues than I did before [eLearning].
- If I need more information to answer a caller's inquiry, I know where to find it on my own.

GBS Course

- Between 90 and 100% said "yes" to each of the following statements:
- I now know more about general billing than I did before [eLearning].
- I now have more confidence dealing with callers [than I did before eLearning].
- I share information with more colleagues than I did before [eLearning].
- If I need more information to answer a caller's inquiry, I know where to find it on my own.

2.4 Results from the Supervisor Questionnaire

The supervisor questionnaire had six closed items and one open-ended item. This questionnaire asked supervisors whether they had observed the following changes in their staff after the eLearning courses. The closed items were:

- The staff seem to know more about wireless data products and services [or general billing] than they did before the eLearning
- They seem to have more confidence dealing with callers
- They seem to be able to give better answers to callers
- If they need more information to answer a caller, they can find it on their own
- They seem to share information with colleagues more than they did before eLearning

The WPS supervisors reported that 97% of their staff in this sample seemed to transfer fewer calls than before and 93% seem to have more confidence dealing with callers [after eLearning]. The two items with lowest impact were: seem to know more about wireless data (74%) and if they need more information to answer a caller, they can find it on their own (72%).

The GBS supervisors reported that 100% of their staff in this sample seem to be able to give better answers to callers than before [eLearning] and to transfer fewer calls than before, and that 97% seem to have more confidence dealing with callers. The two items with lowest impact were: seem to know more about general billing (72%) and seem to share more information with colleagues (86%).

2.5 Interpreting Results: Design Concerns

The fact that the subjects in the study were busy workers functioning in a very busy environment resulted in some constraints. For example, intrusive methods such as observation were not possible. With the relatively small samples represented in this evaluation, generalisations must be made with caution. However, the fact that the sample was chosen randomly ensured that the sample could be considered to be representative of the population as a whole.

A more serious concern has to do with the percentage of CSOs and supervisors in the samples who completed and returned the questionnaires. In this study, the response rate was 67% for the CSOs and 54% for the supervisors. However, the important evidence in this study seems so unambiguous that confidence in it is high despite this shortfall in the response rate.

That the evidence in the study comes from self-reported, impressionistic data has to be acknowledged. With self-reported data, reliability is often a concern. This might be more of a concern if the data were not so strongly skewed in a positive direction. Also, the collection of corroborative data from the supervisors of the CSOs in the sample provided some triangulation of data.

While there was no rigorous formal validation of the questionnaires, the data collection instruments were carefully designed to provide data that were likely to provide acceptable levels of validity and reliability. The focus of the items was narrow and the subjects were highly familiar with the tasks. In some evaluations, there is a concern that respondents will give "expected" or "socially desirable" responses instead of revealing their true feelings. This is always possible since a respondent could guess what a desirable response might be. The actual likelihood of this having occurred was minimised by the fact that the responses were anonymous and questionnaires were returned by e-mail to the independent external evaluator rather than to the subjects' supervisors.

2.6 Effectiveness of the eLearning Courses

Data from the CSOs in the sample studied showed that they felt they could handle customers' calls better after eLearning than they could before it. Data from their supervisors indicated that they observed the impact of this eLearning on these members of their staff.

The CSOs also reported that they:

- had more confidence dealing with customers than they had before eLearning
- can now provide better answers to callers' questions
- know more about the field they studied
- transfer fewer calls to others
- have made several other desirable behavioural and attitudinal changes.

In specific terms, the majority of learners in both classes felt that their performance had improved at least somewhat in almost every task taught. Between the two courses 33 relevant tasks were taught. In 30 of those tasks, the majority felt their performance had improved. The lack of ambiguity in the data does provides confidence in the conclusions and lessens any technical concerns we might have about reliability or return rates or self-reported data.

2.7 Business Results (ROI)

Three types of ROI results were reported: 1) cost savings, 2) training time savings, and 3) indirect savings. The savings shown below are based on a comparison between the costs of the total eLearning programme of four courses (the two reported in this paper and two more) and the costs of the "equivalent" instructor-led programme. Throughout the analysis, in order to be conservative, it has been assumed that 800 CSOs will take the programme rather than the 1,000 predicted. Total savings with the new programme were over SG$2M. Net savings, after deducting the costs for development of the new programme were SG$348,518.

ITEM	COST SAVINGS (SG$)
Staff productivity gain (a result of diminished training time)	828,800
Reduction in instructor costs	44,000
Training materials	19,200
Reduction in training room costs	280,000
Participant replacement costs (at 40% replacement)	808,960
Refreshments	63,200
Total savings	2,044,560
Less hardware & software costs	-80,042
	1,964,518
Less development costs	-1,616,000
Net savings	$348,518

The new eLearning courses required 25 eLearning days whereas the equivalent instructor-led courses required 39.5 days. This gave a reduced training time of 37%. For each day a staff member took the "equivalent" instructor-led course, she/he was away from the work site resulting in a complete loss of productivity. With the eLearning programme, the CSO was away from her/his workstation only twelve hours, and never for a full day. Except for these twelve hours, the CSOs took the course via the company intranet at his/her workstation. Most CSOs scheduled their learning for slow times so that down time was minimised.

Because eLearning occurred at the workstation, operational benefits resulted. eLearning time could be scheduled to suit individual needs. There was no need to provide coverage for a staff member away on a training course. Both scheduling and rescheduling of eLearning experiences was flexible and relatively easy.

The following indirect savings were not included in the ROI calculation above:

- Technology transfer: the client acquired expertise and processes to run eLearning programmes (and has since done so).
- A group of instructors has received eLearning and practice in the skills needed to function effectively as eCoaches for eLearning courses.
- A large number of the company's employees are now comfortable and competent in learning via the eLearning approach used (initially they had been quite negative) – more than two-thirds "liked learning this way" and more than three-quarters were "quite willing to receive future training using eLearning."
- The company can extend the new programme to additional CSOs without incurring additional expense except deployment costs.
- Although certain "soft benefits", such as CSOs' increased confidence in serving callers and in providing better answers to callers, are difficult to quantify and assign a dollar value to, it is likely that they will have a positive effect on the quality of service and job satisfaction.

2.8 The Bottom Line

Two critical business objectives of the company's eLearning initiative to multi-skill its CSOs were to maximise training dollars and to reduce training time. Both were achieved and the savings in eLearning costs and eLearning time were not made at the expense of quality or effectiveness.

3 Conclusion

The impact evaluation described in this paper is not intended to be promoted as the ideal impact evaluation. Instead, it is a realistic portrayal of a typical impact evaluation that can be conducted in a corporate context at a reasonable cost within a satisfactory timeframe. More extensive and more rigorous evaluations would certainly be possible, but they would also take more time and cost much more money. This evaluation was able to build a case for impact using multiple data sources as opposed to providing unassailable scientific data that the eLearning caused the observed results. We think that this will be viewed as a more viable approach in most corporate contexts.

4 References

Kirkpatrick, D. L. (1994). *Evaluating training programs: The four levels*. San Francisco: Berrett-Kochler Publishers.

Phillips, J. J. (1997). *Return on investment in training and performance improvement programs*. Houston, TX: Gulf Publishing Company.

Reeves, T. C., & Hedberg, J. G. (in press). *Interactive learning systems evaluation*. Englewood Cliffs, NJ: Educational Technology Publications.

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